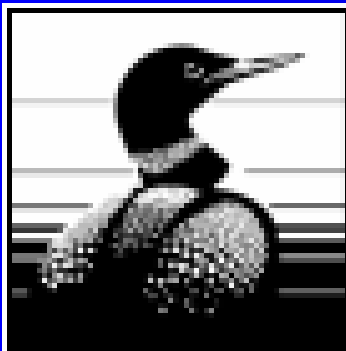


Hg in Canadian Wildlife: Trends and Toxic Impacts

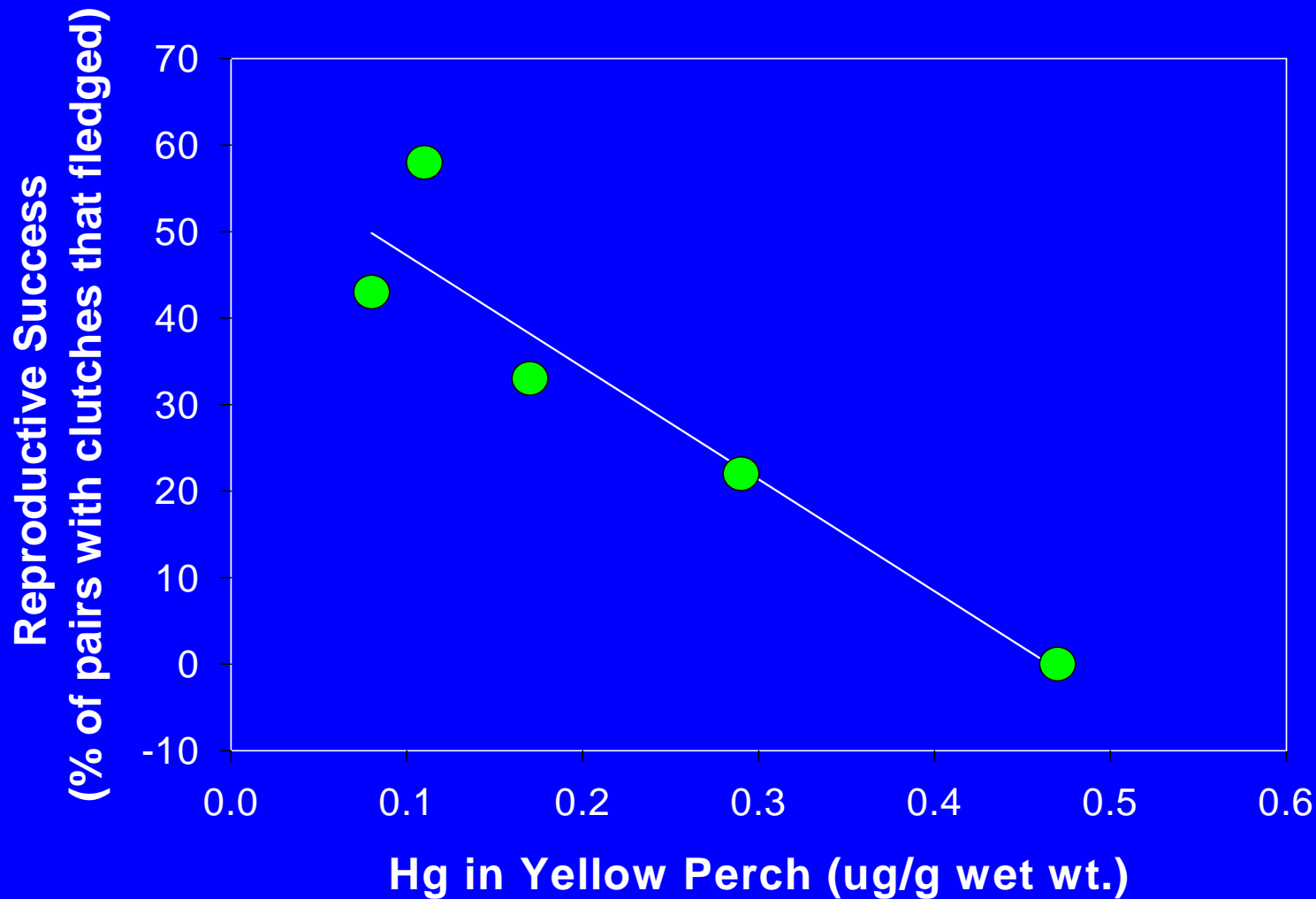
Tony M. Scheuhammer
Environment Canada
Canadian Wildlife Service
National Wildlife Research Centre

In conjunction with:

Nil Basu (McGill)
Birgit Braune (NWRC)
Neil Burgess (CWS – Atlantic)
Dave Evers (BioDiversity Inc.)
Mike Meyer (Wisconsin DNR)
Shari Weech (UBC)
Chip Weseloh (CWS – Ontario)

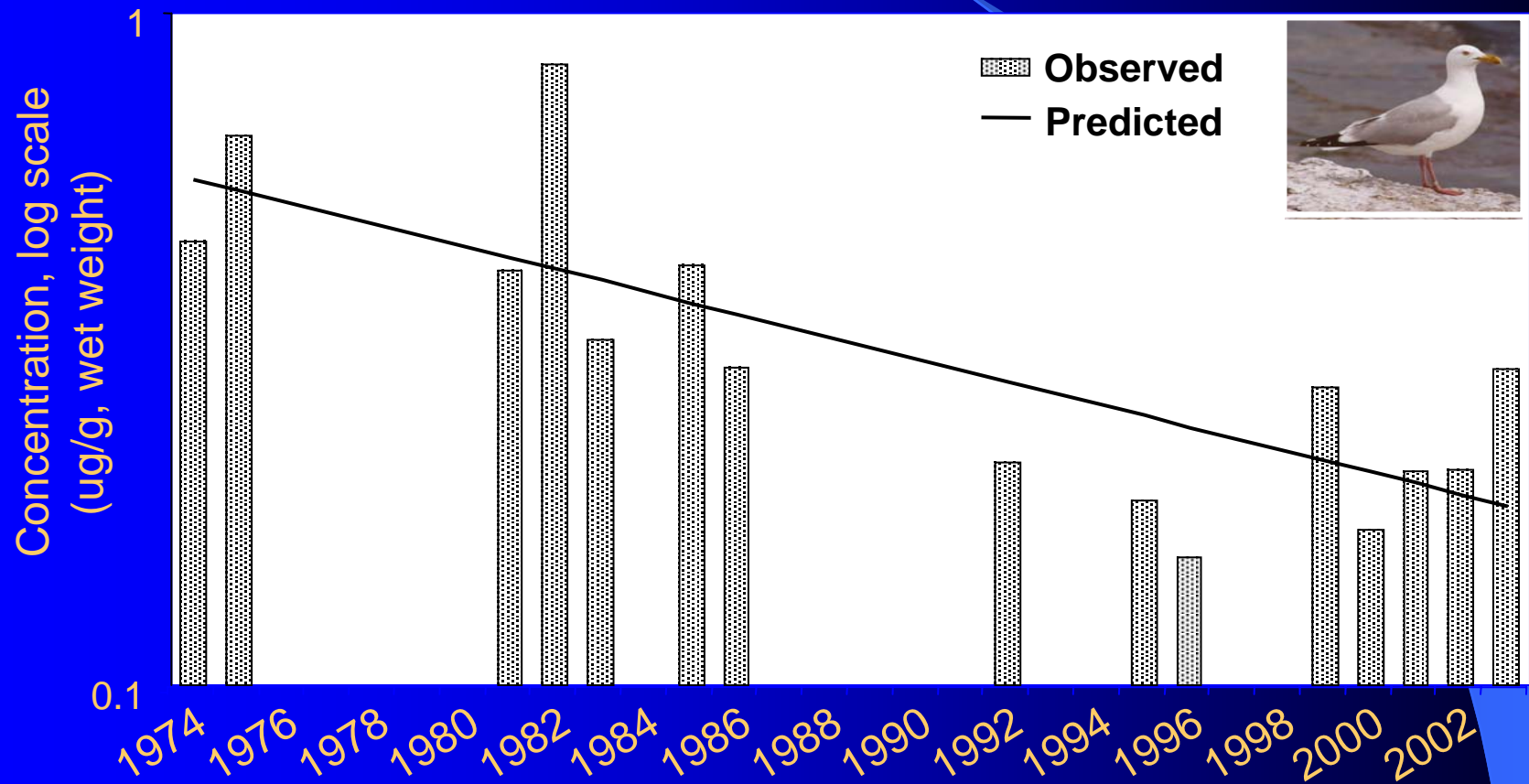


Hg in Fish vs. Loon Reproductive Success, English-Wabigoon River



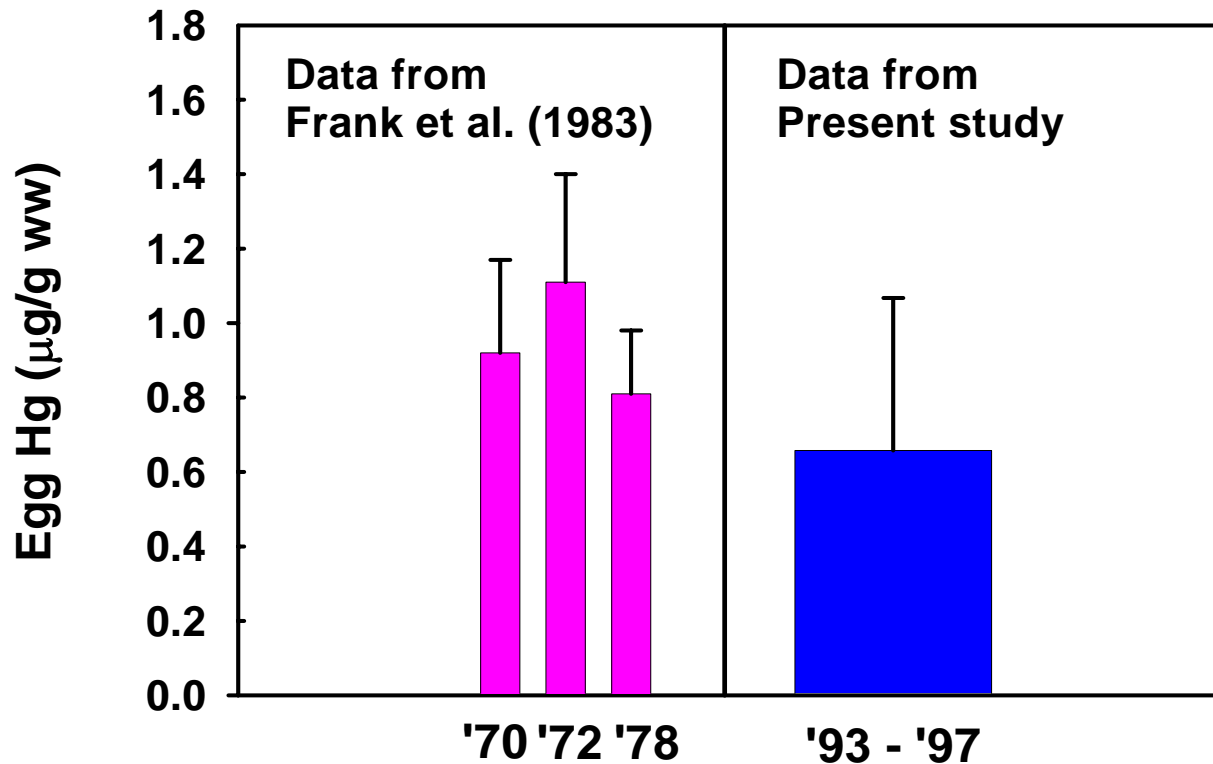
(adapted from Barr, 1986)

Mercury in Herring Gull eggs Snake Island, Lake Ontario 1974 - 2003

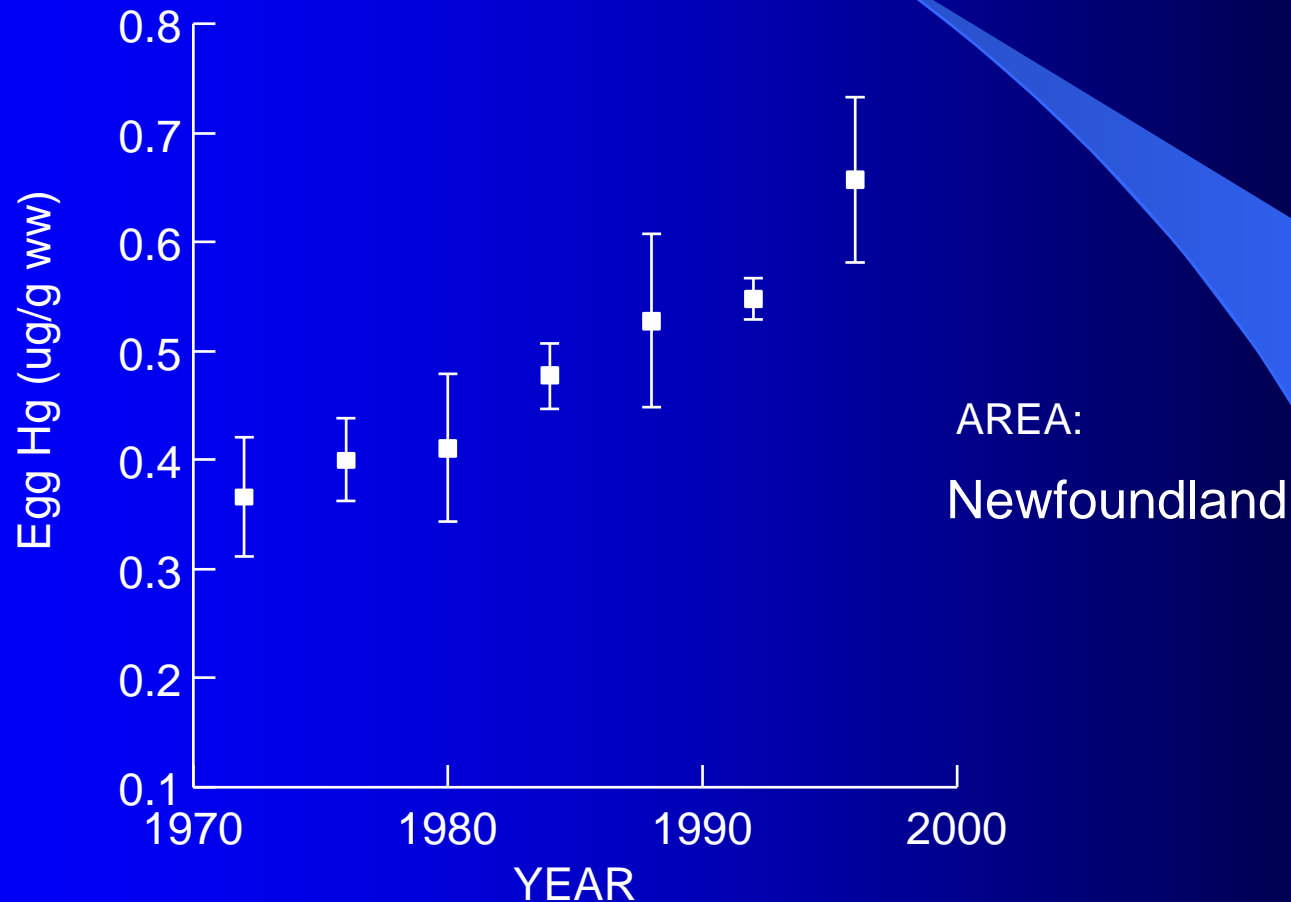


Courtesy of D.V. Weseloh
CWS, Ontario Region

Hg in Loon Eggs (S. Ontario) 1970s vs. 1990s

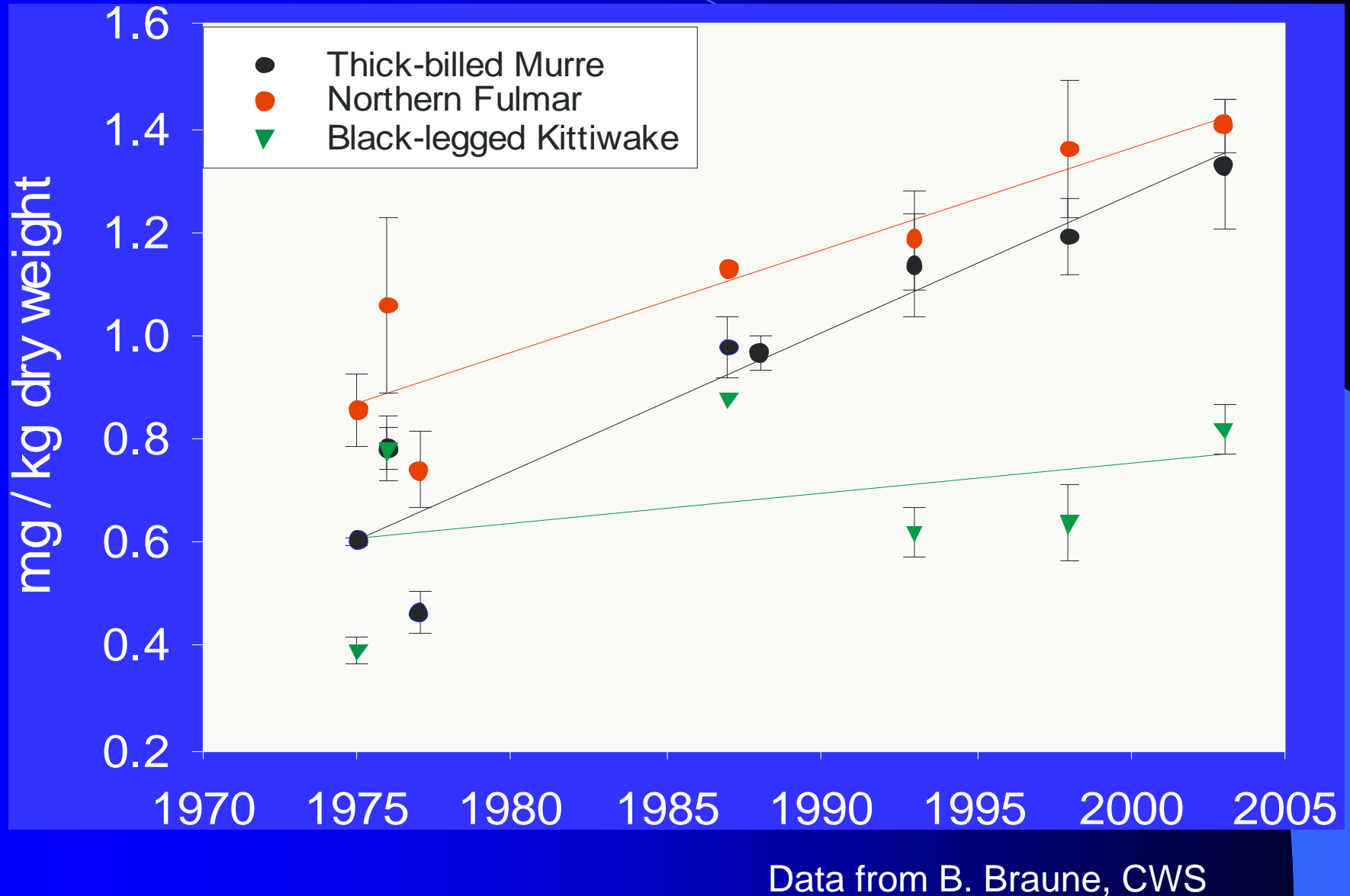


Hg in Eggs of Leach's Storm Petrel from Atlantic Canada

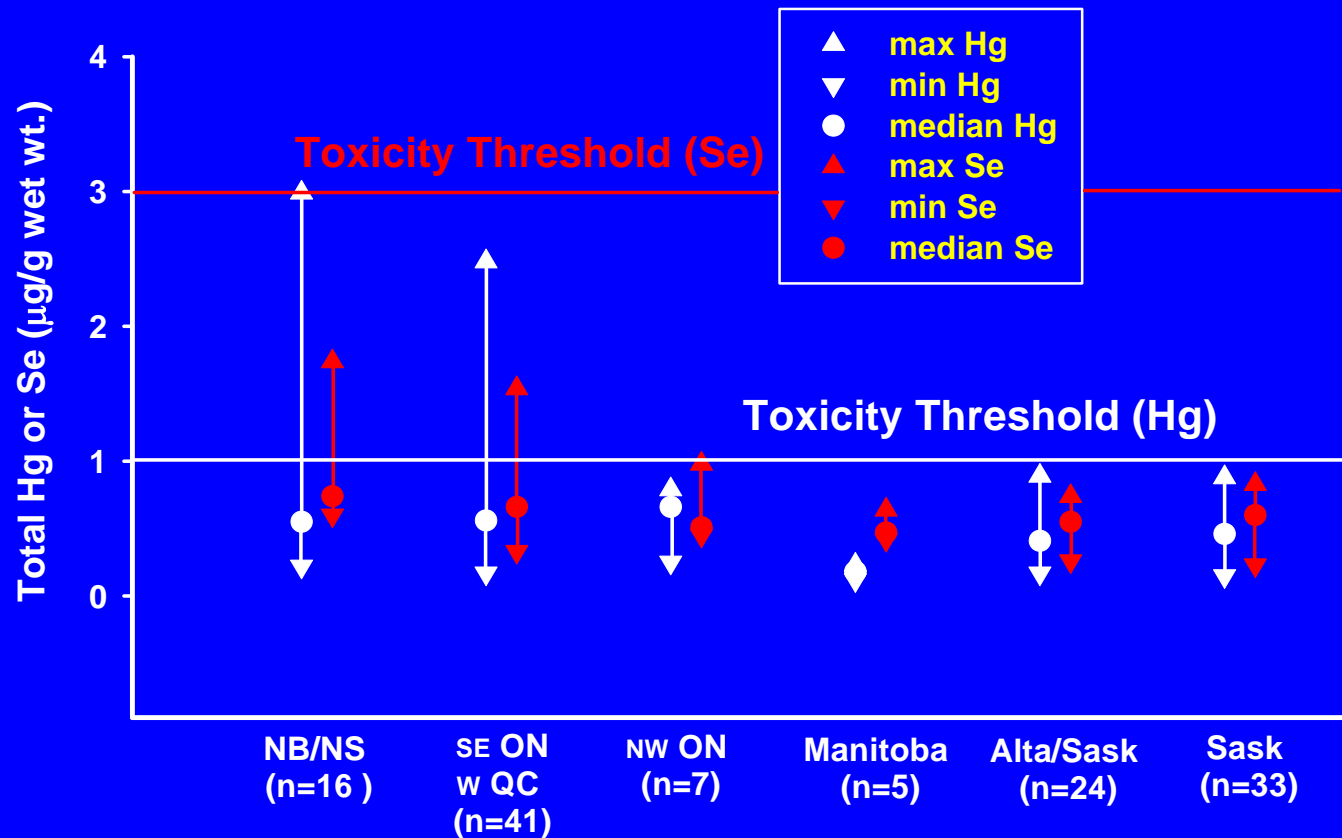


Data from Burgess, CWS

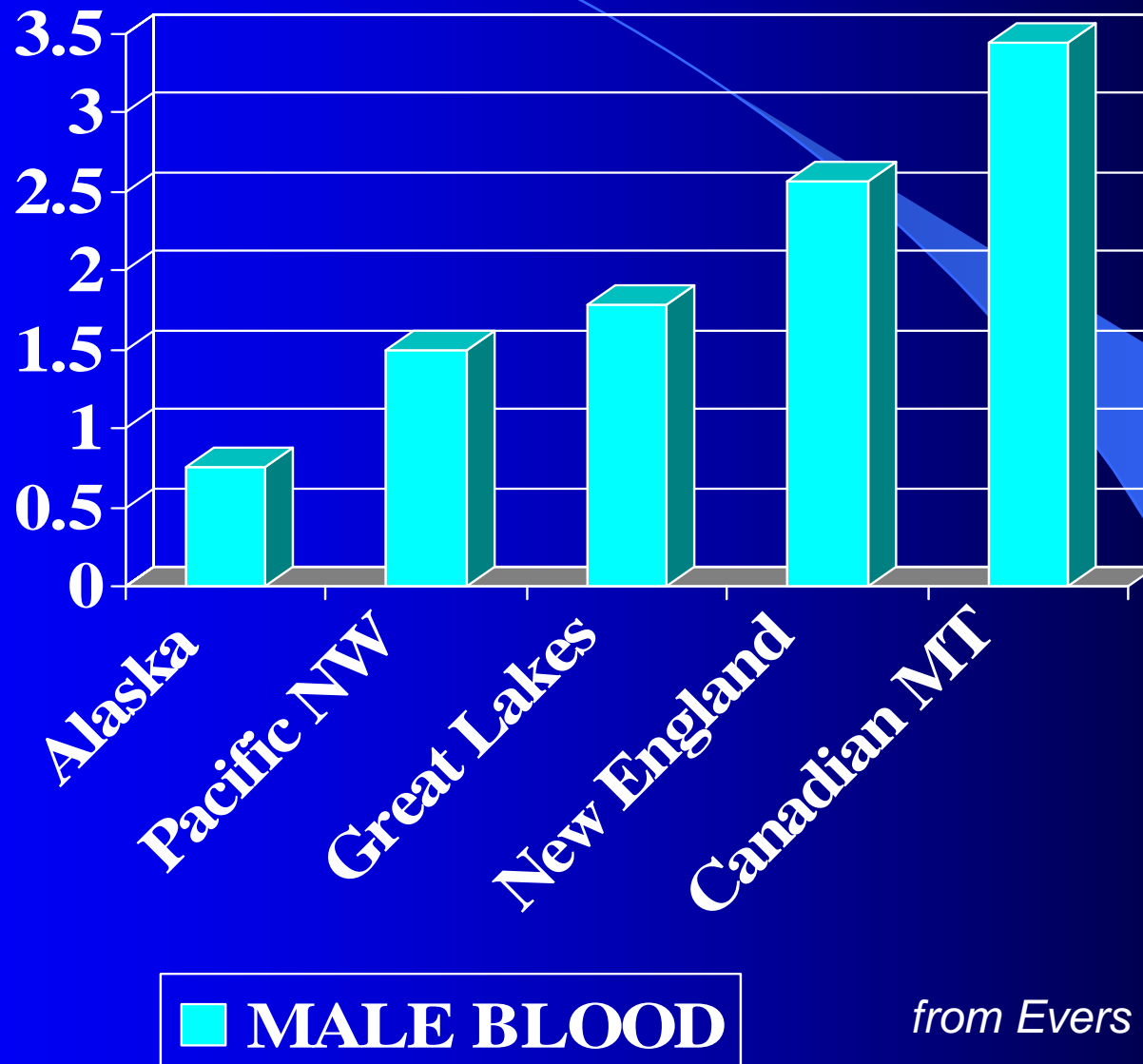
Mercury in Arctic Seabird Eggs Prince Leopold Island 1975 - 2003



Hg and Se in Loon Eggs from Canada (east to west)



Geographic Trend in Loon Hg Exposure



from Evers et al. 1993

Loon Egg Summary

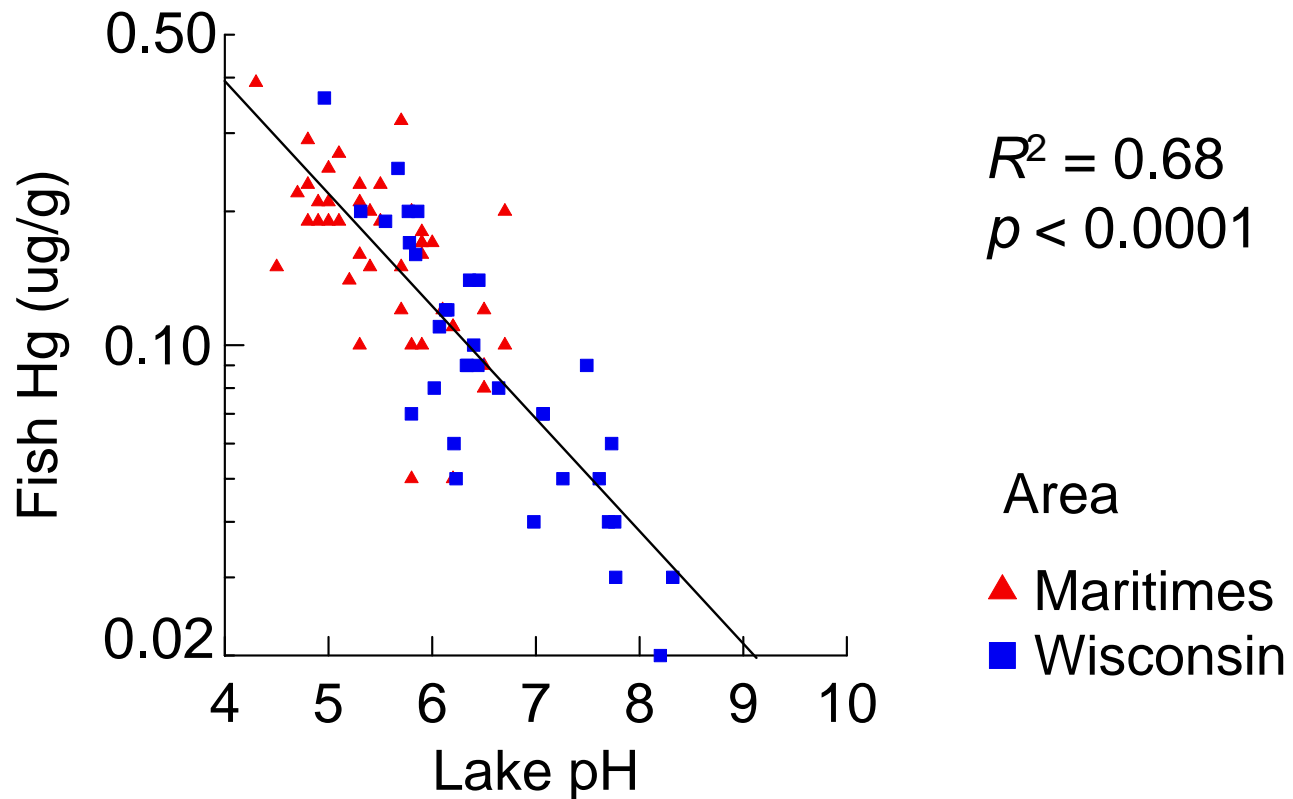
- Nine of 57 (~16%) loon eggs collected from eastern Canada had Hg concentrations greater than the level generally associated with reproductive impairment in birds (1 ug/g ww)
- Zero of 69 (0%) loon eggs collected from western Canada had concentrations greater than the threshold for reproductive impairment

Loon Egg Summary (cont.)

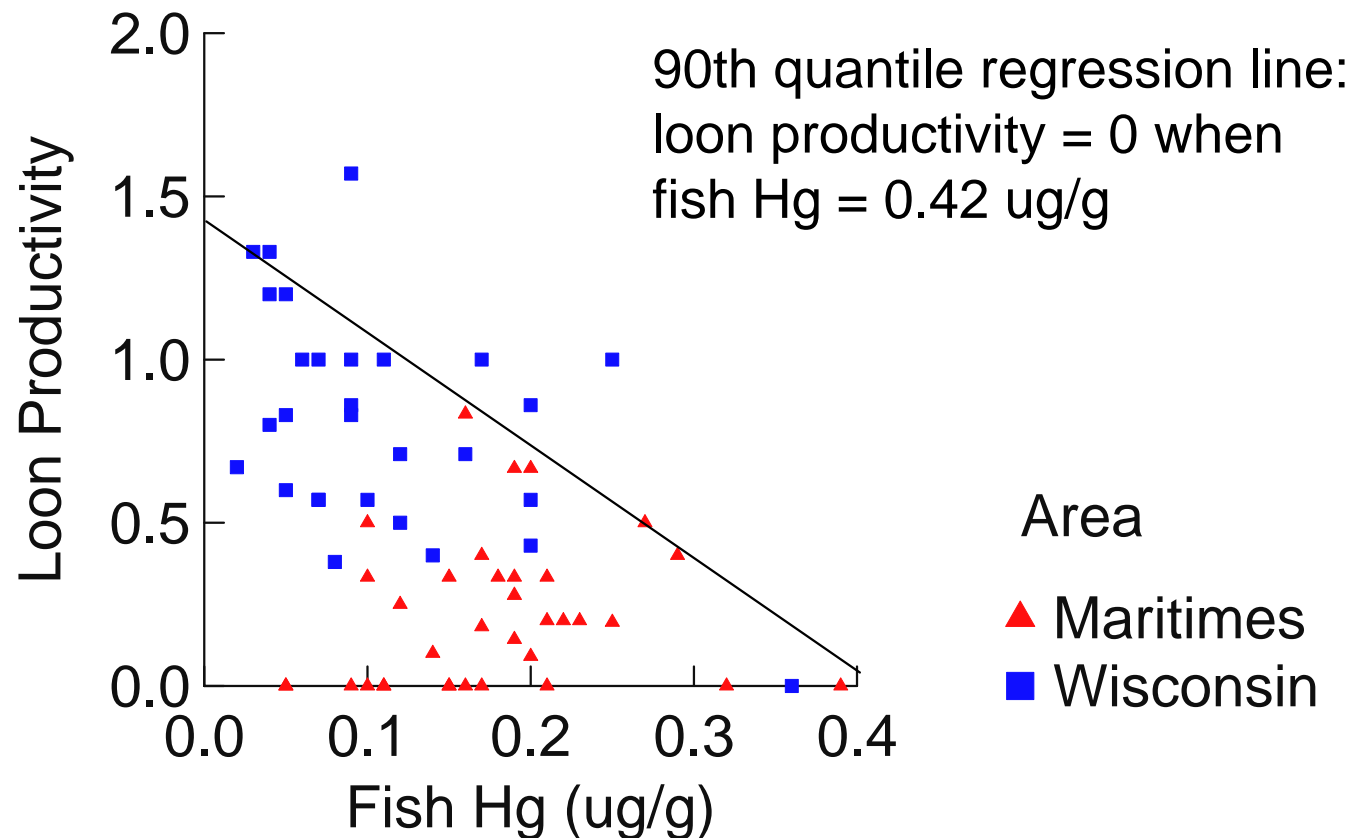
- Eggs with the highest Hg levels were from areas of eastern Canada characterized by dilute, low alkalinity waters impacted by acid deposition.

Fish Hg related to lake pH

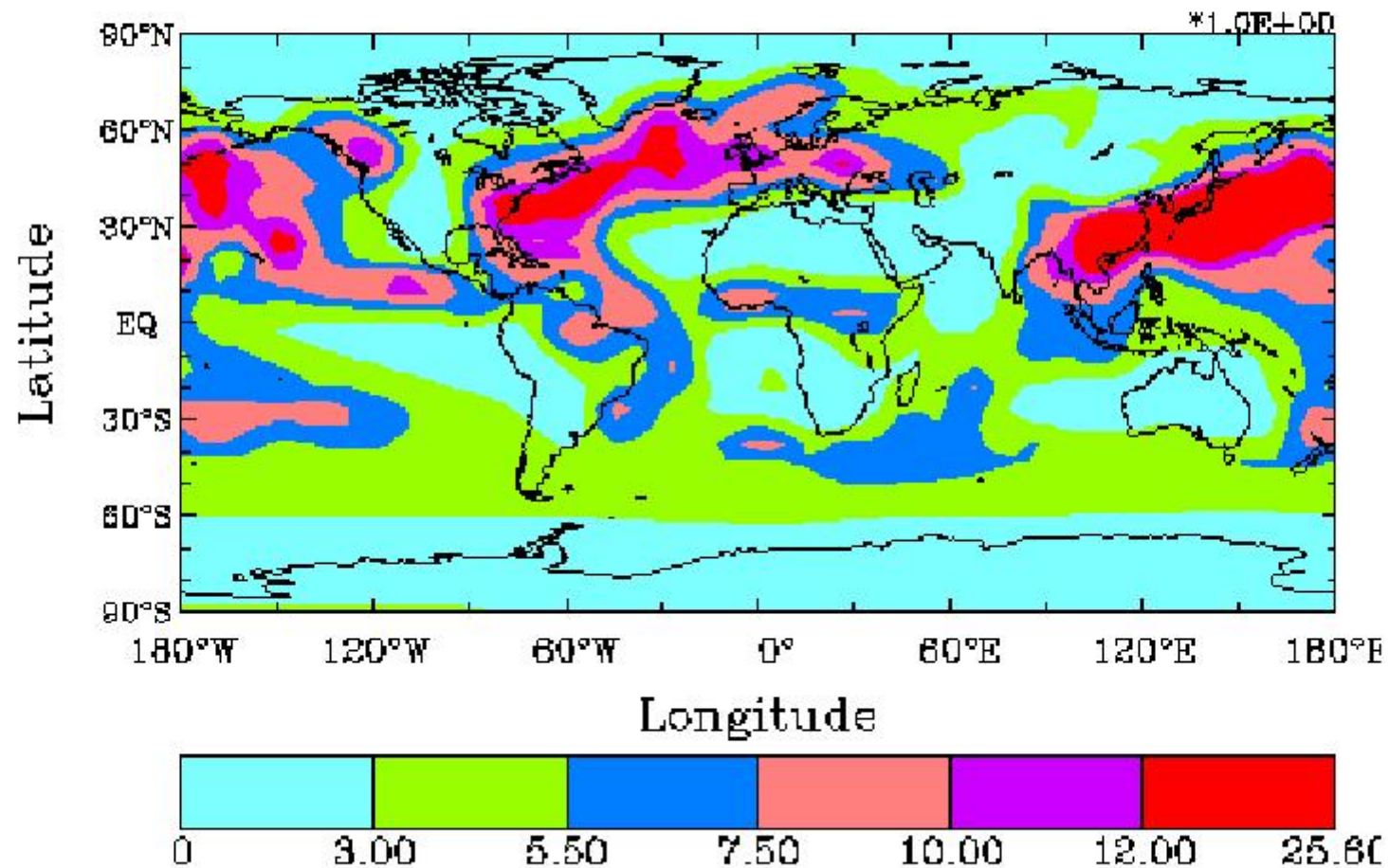
(prey fish 3" - 5" in length)



Consider Fish Hg as Limiting Factor

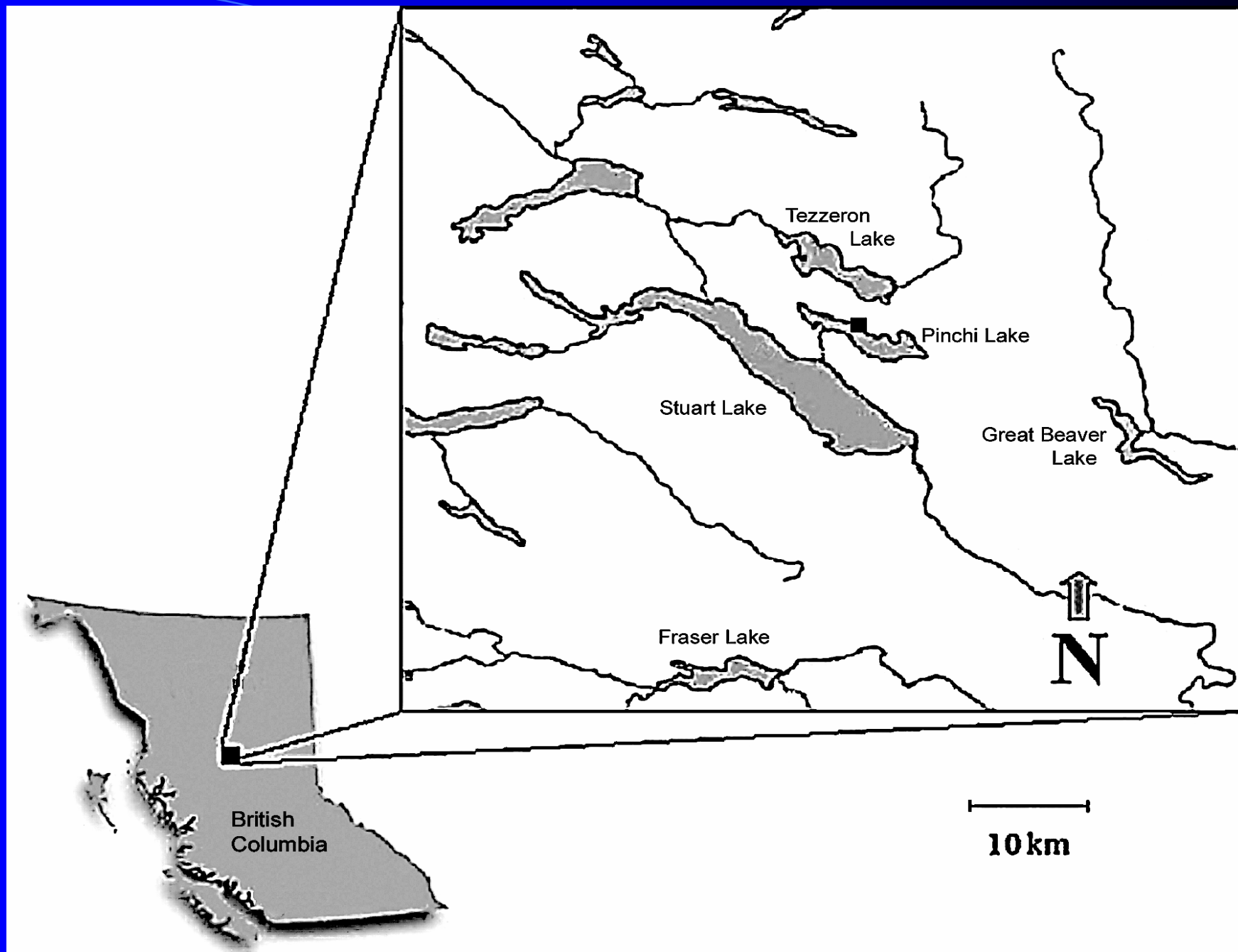


The wet deposition flux of total mercury ($\mu\text{g}/\text{m}^2\text{-y}$)

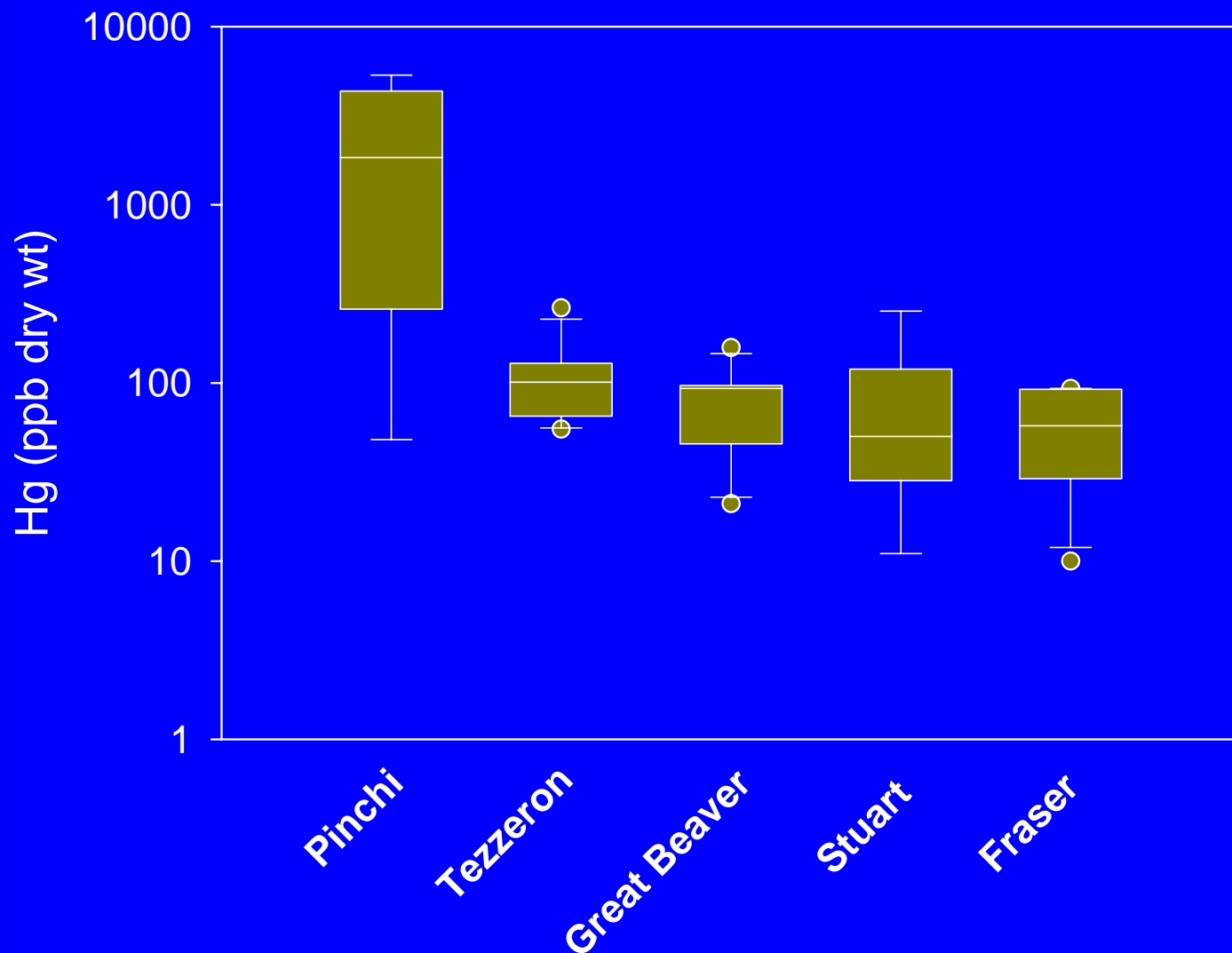


Pinchi L., BC Study Area

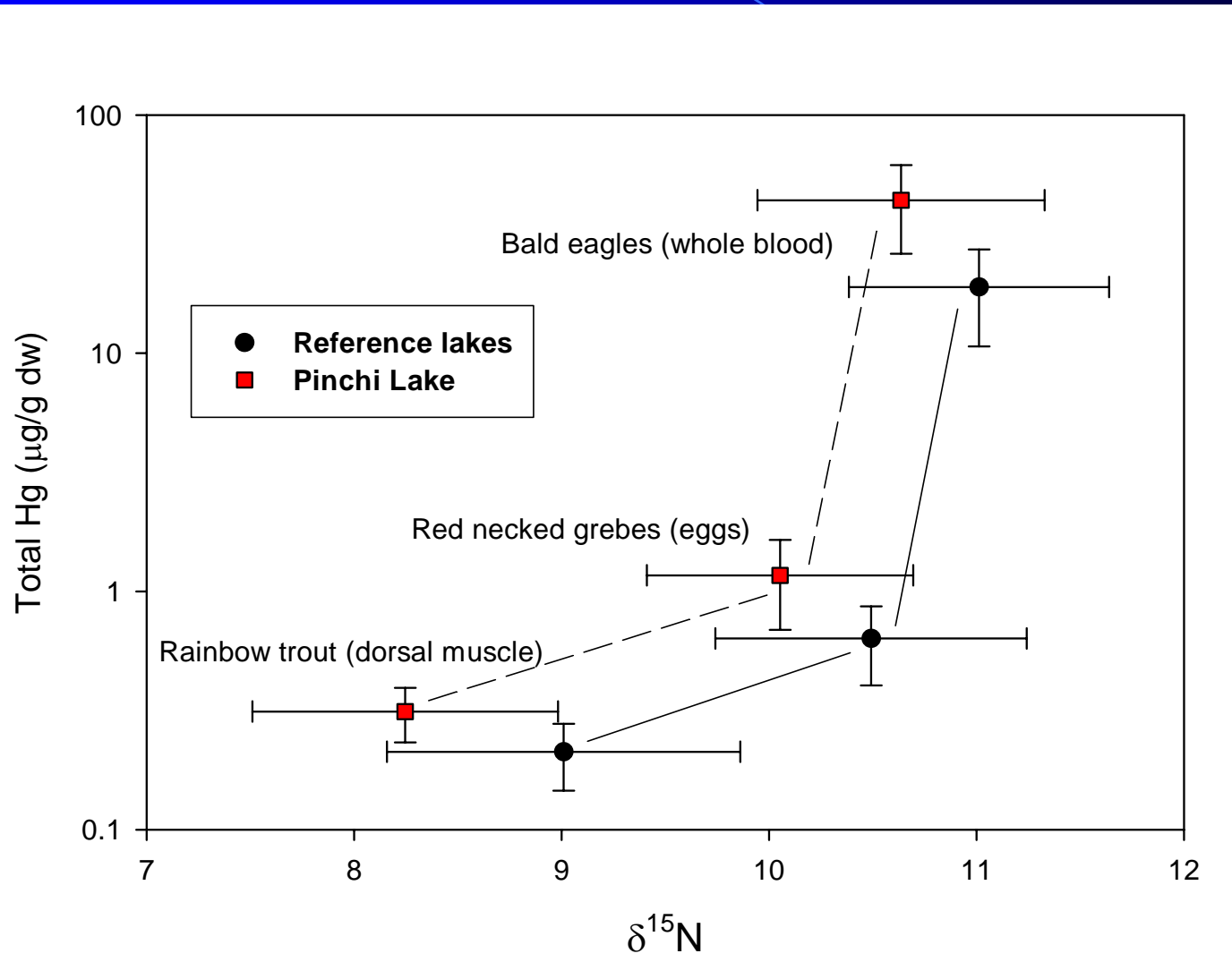




[Hg] in Surface Sediments



Hg at various trophic levels, Pinchi L. vs. nearby reference lakes

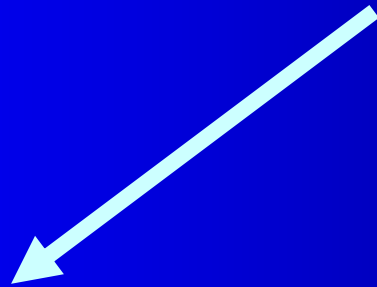


Neurochemical Biomarkers

0.05 - 1ppm dietary MeHg

(environmentally realistic exposure)

MERCURY



**BRAIN
CHEMISTRY**



**IMPAIRED
BEHAVIOUR**

Wild Mink – Muscarinic Receptor

